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ABSTRACT

In 1965, Taeuber and Taeuber published trend data on racial residential segregation in 109 cities for the years 1940, 1950, and 1960. Their monograph, Negroes in Cities, reported a number of analyses of residential segregation and neighborhood change, utilizing segregation indexes and a variety of other measures derived from census data. In 1971, The Institute for Research on Poverty at the University of Wisconsin embarked on the task of updating to 1970 and in other ways extending these earlier studies of racial residential segregation. Segregation indexes for 109 cities for 1970, together with the previously published indexes for the three earlier census dates, are presented in Table One of this paper. The trend data for 1940 through 1970 refer to residential segregation of whites and nonwhites. For 1970 only, segregation indexes are also presented comparing whites and Negroes. The indexes for 1970 were calculated from Public Use Summary Tapes issued by the Bureau of the Census. Certain difficulties were encountered in use of these tapes for this purpose. A methodological appendix describes the data source and retrieval procedure for calculation of city segregation indexes for 1970. To permit quick dissemination of the indexes to other researchers, this paper is issued without substantive analysis or interpretation. (Author/JM)

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INDEXES OF RACIAL RESIDENTIAL SEGREGATION FOR 109 CITIES IN THE UNITED STATES, 1940 to 1970 (with METHODOLOGICAL APPENDIX)

Annemette Sørensen, Karl E. Taeuber, and
Leslie J. Hollingsworth, Jr.

Studies in Racial Segregation, No. 1

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(with METHODOLOGICAL APPENDIX)

by

Annemette Sørensen, Karl E. Taeuber, and Leslie J. Hollingsworth, Jr.

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INDEXES OF RACIAL RESIDENTIAL SEGREGATION FOR 109 CITIES IN THE UNITED STATES, 1940 TO 1970

Public Microdata Approach

ABSTRACT

An index of racial residential segregation for a city may be calculated from census data reporting the number of white and nonwhite households resident in each city block. Such an index summarizes the dissimilarity in residential location of the two groups. Segregation indexes for 109 cities for the years 1940, 1950, and 1960 were published in 1965 in Taeuber and Taeuber, Negroes in Cities.

Segregation indexes for 109 cities for 1970, together with the previously published indexes for the three earlier census dates, are presented in Table 1 of this paper. The trend data for 1940 through 1970 refer to residential segregation of whites and nonwhites. For 1970 only, segregation indexes are also presented comparing whites and Negroes.

The indexes for 1970 were calculated from Public Use Summary Tapes issued by the Bureau of the Census. Certain difficulties were encountered in use of these tapes for this purpose. A methodological appendix describes the data source and retrieval procedure for calculation of city segregation indexes for 1970.

To permit quick dissemination of the indexes to other researchers, this paper is issued without substantive analysis or interpretation.

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TABLE 1 (cont.)

CITY	1970	1970	1960	1950	1940
New Rochelle, NY	75.1	70.7	79.5	78.9	80.6
New York, NY	77.3	73.0	79.3	87.3	86.8
Norfolk, VA	93.5	90.8	94.6	95.0	96.0
Oakland, CA	70.4	63.4	73.1	81.2	78.4
Oklahoma City, OK	95.6	81.8	87.1	88.6	84.3
Omaha, NB	89.6	85.6	92.0	92.4	89.5
Pasadena, CA	85.5	75.0	83.4	85.9	84.2
Paterson, NJ	72.0	70.3	75.9	80.0	79.8
Philadelphia, PA	84.4	83.2	87.1	89.0	88.0
Pittsburgh, PA	85.9	83.9	84.6	84.0	82.0
Port Arthur, TX	87.6	87.0	90.4	91.3	81.7
Portland, OR	86.2	69.0	76.7	84.3	83.8
Providence, RI	76.8	72.0	77.0	85.5	85.8
Richmond, VA	91.4	90.8	94.8	92.2	92.7
Roanoke, VA	92.7	91.8	93.9	96.0	94.8
Rochester, NY	76.5	73.8	82.4	86.9	85.5
Sacramento, CA	71.1	56.3	63.9	77.6	77.8
St. Louis, MO	90.1	89.3	90.5	92.9	92.6
St. Paul, MN	87.1	76.8	87.3	90.0	88.6
San Antonio, TX	89.7	81.8	90.1	88.3	79.6
San Diego, CA	85.6	71.6	81.3	83.6	84.4
San Francisco, CA	75.0	55.5	69.3	79.8	82.9
Savannah, GA	91.8	91.2	92.3	88.8	84.2
Seattle, WA	82.2	69.2	79.7	83.3	82.2
Shreveport, LA	97.8	97.4	95.9	93.2	90.3
Springfield, OH	81.9	81.1	84.7	81.6	80.9
Tampa, FL	92.0	90.7	94.5	92.5	90.2
Terre Haute, IN	87.4	82.5	90.1	89.8	86.6
Toledo, OH	89.1	86.7	91.8	91.5	91.0
Topeka, KS	79.4	74.1	83.5	80.7	80.8
Trenton, NJ	78.1	77.2	79.6	83.0	81.9
Tulsa, OK	94.5	76.4	86.3	91.2	84.6
Waco, TX	88.9	86.8	90.7	87.0	80.1
Washington, DC	78.8	77.7	79.7	80.1	81.0
Wichita, KS	93.0	85.0	91.9	93.3	92.0
Wilmington, DE	70.5	69.8	79.8	86.2	83.0
Winston-Salem, NC	94.6	94.0	95.0	93.8	92.9
Yonkers, NY	73.1	68.0	78.1	81.7	82.0
Youngstown, OH	75.9	74.9	78.5	83.5	80.0

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APPENDIX

DATA SOURCE AND RETRIEVAL PROCEDURE FOR CALCULATION OF CITY SEGREGATION INDEXES FOR 1970

The primary data source for the present study is the computer tape file from the 1970 Census, "Third Count Population and Housing Summaries for City Blocks and Census Tracts in Blocked Areas." All Third Count summary data for a given state are together on one logical file on one or more reels of tape. The Third Count summary tapes have two separate sequences of data, one for Block Publishing Areas and another for Contract Block Publishing Areas. The first portion of the file, for Block Publishing Areas, contains the data used in this study. This portion of the file has data on blocks and tracts in urbanized areas and some adjacent areas.[1] For each block and tract in the urbanized area, 38 tables are published. Five of these contain population data and 33 contain housing data. One of these, Table 12, "Tenure and Race of Head," was used for the computation of indexes of dissimilarity for nonwhites/whites and other race and race-by-tenure groups. Table A-1 in the report gives a listing of the data available in Table 12 of the Third Count summary tapes.

To make the 1970 segregation indexes comparable to the indexes previously calculated for 1940, 1950, and 1960, data were needed for blocks within each of 109 cities. Each block that was in a city of interest to this study had to be identified. Numerical identification codes are listed in the geographical field of each record of the Third

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Count tapes. A list of the geographic information is given in Table A-2 of this report. These geographic codes, singly or in combination, are insufficient to determine for every block whether it is located in a particular city within an urbanized area. Lack of a city code on the Third Count summary tapes greatly complicates the task of obtaining data for blocks within the central city. (The same problem confronts the user of the published block bulletins for 1970.)

A computerized procedure was devised to retrieve data for city blocks from the summary tapes. An account of the computer programming involved in this retrieval is given in Gates (1972) and Sörensen (1974a). Here a description of the logic of the procedure will suffice. A diagram of the procedures is given in Figure A-1 of this report.

To retrieve data for city blocks from the Third Count summary tapes, additional geographic information has to be obtained for each block in the urbanized area. This information is provided by the Master Enumeration District List (MEDList). The MEDList provides a listing of geographic codes and names of different geographic areas, ranging from the county to the block group level (see Table A-3).[2]

The MEDList does not provide a listing of codes and names for blocks. Consequently, the unit for which additional geographic information was obtained was not the block but instead the smallest unit identifiable on both the MEDList file and the Third Count summary tapes. This was either the block group or the census tract. Block group records were used where available. For cities where no block group codes had been assigned, tract records were used as the source of additional geographic information.

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FIGURE A-1

DIAGRAM OF RETRIEVAL PROCEDURE

Read county, tract and block group code from record n on 3rd Count [illegible] type.
Is there a block group record on "MEDList with matching county, tract and block group codes"?
NO
YES
Find the tract record on MEDList with matching county and tract codes.
Read next record
Ignore record n from 3rd Count file.
NO
Examine place description code for matching MEDList record. Is this record located in a city of 50,000 or more population?
YES
Merge 3rd Count record n with the matching MEDList record. Move to file "City-Blocks-1."
Read next record

[illegible]

For each block record on the third Count tape, the MUCLIST routine for the corresponding block group or tract was examined. The place description code (item 4 on the MUCLIST record) specifies whether the block group (or tract) is located within the central city of an urbanized area.[3] If so, both the Third Count and MUCLIST records for the block were merged into a file titled "City-Blocks-1."

Before proceeding with calculations of segregation indexes from the block data on City-Blocks-1, we conducted a check on whether the data on this newly created file were what we thought they were. The checking procedure is described more fully below, but its basic feature was a comparison between the number of households tallied for a city from City-Blocks-1 and the number of households reported for that city in the official Census count. There are several reasons not to expect an exact correspondence, but we were surprised to find for some cities that discrepancies between the two counts considerably exceeded 3 percent. We thought these large discrepancies probably arose from one particular source, the inclusion on City-Blocks-1 of an unknown number of households located outside of the city but in block groups or tracts that lie partially within the city.

For many cities, particularly those that are still growing by annexation, the boundaries of block groups and census tracts sometimes cross the boundaries of the central city. Indeed, the boundaries of the city may dissect individual blocks. The Bureau of the Census has--or could create--a file for each city containing only those blocks and portions of split blocks that are located within the city boundaries. The geographic identification scheme made available for

[illegible] were not correct such census delineations. In an imperfect correlation was identification of the location of blockbuilt it was necessary to follow a tedious clerical procedure.

Most of the cities with large disproportions were in cities [illegible] which blocks are grouped into census tracts but not smaller block groups. Because block groups are relatively small units [illegible], inclusion of selected blocks from the block groups used to split by city boundaries seldom caused a great increase in the [illegible] which contrast were City-Blocks-I as being in the city. [illegible] are lumped and need to be cut by city boundaries many [illegible]. Correction is not working file of all blocks in split clusters but it is [illegible] to a minimum definition of the household count. The coordinates [illegible] were determined by reference to census tract data, [illegible] block groups were used if available.

A listing of all split blocks in a city subject were [illegible] made from MOSAIC. The maps published in the "Block Orientation" [illegible] for the city were examined visually. This is quite [illegible] because the maps for a large city are spread over 5 or more sheets, and all boundaries relevant to census use are portrayed by means of a complex coded system. From this examination a list was made of the [illegible] block of all blocks located outside the city boundary. [illegible] was possible for blocks split by city boundaries many of the [illegible] in their entirety on the City-Blocks files.) The list of [illegible] was computer input and compared with the City-Blocks-I [illegible] All blocks identified in this way as being located outside the city were deleted from the file. The new file with centroid [illegible]

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TABLE A-3

LISTING OF MEDLIST ITEMS

1. 1970 State Code
2. 1960 State Code
3. Federal Standard County Code
4. County of Tabulation Code
5. Central County Code
6. Minor Civil Division or Census County Division Code
7. Place Code
8. Place Description Code
9. Size of Place Code
10. Standard Consolidated Area Code
11. Standard Metropolitan Statistical Area Code
12. Urbanized Area Code
13. Tracted Area Code
14. Universal Area Code Prefix
15. Universal Area Code
16. State Economic Area Code
17. Economic Sub-Region Code
18. Central Business District Code (Blank in GACI)
19. Area Name
20. Basic Tract Code
21. Tract Suffix Code
22. Block Group Code
23. Enumeration District Code
24. Enumeration District Suffix Code
25. Urban/Rural Classification Code
26. Ward Code (ED records only)
27. Congressional District Code
28. Housing Count
29. Population Count

Source: Technical Document No. GT-1, National Data Use and Access Laboratories, July, 1971.

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TABLE A-4

COMPARISON OF NUMBER OF HOUSEHOLDS IN TALLY FROM CITY-BLOCKS-2 WITH NUMBER OF HOUSEHOLDS IN OFFICIAL CENSUS COUNT, FOR 109 CITIES

City	From City-Blocks-2 Tape File		From Census Publications		Derived Figures	
	Tally of Households (1)	Tally of Total Housing Units Suppressed (2)	Estimated Error in Year-round Housing Units (3)	Official Count of Households (4)	Adjusted Household Tally From City-Blocks-2 (5)	Percentage Discrepancy (6)
Akron, OH	91131	507	0	91593	91616	0.0
*Asheville, NC	20704	291	354	20061	21310	6.2
Atlanta, GA	166253	1124	757	162291	168039	3.5
Atlantic City, NJ	19212	129	333	19561	19603	0.2
Augusta, GA	19744	190	0	19877	19922	0.2
*Austin, TX	79303	582	370	78570	80176	2.0
Baltimore, MD	287034	1732	1617	289349	290206	0.3
Beaumont, TX	36553	523	0	37027	37036	0.0
Berkeley, CA	44331	104	1298	45655	45682	0.1
Birmingham, AL	101509	918	161	99956	102533	2.6
Boston, MA	215002	815	2484	217622	218091	0.2
Bridgeport, CT	52761	218	0	52924	52972	0.1
Buffalo, NY	157679	163	98	157951	157927	0.0
Cambridge, MA	36261	130	23	36411	36409	0.0
Camden, NJ	32385	415	0	32565	32776	0.6
*Canton, OH	36916	1180	0	37146	38038	2.4
*Charleston, SC	21219	146	0	21213	21351	0.7
Charleston, WV	25242	523	110	25595	25839	1.0
*Charlotte, NC	77848	565	0	76992	78387	1.8
*Chattanooga, TN	40512	599	1198	40856	42186	3.3
Chester, PA	17754	126	0	17869	17874	0.0
Chicago, IL	1132015	1235	532	1137854	1133679	-0.4
Cincinnati, OH	162161	429	0	159838	162558	1.7
Cleveland, OH	245850	575	3019	248280	248289	0.0
*Columbia, SC	28256	277	31	27952	28542	2.1
*Columbus, OH	175846	568	835	173056	177177	2.4
*Covington, KY	17947	70	0	18134	18012	-0.7
*Dallas, TX	279880	1581	743	280993	282033	0.4
*Dayton, OH	81290	363	70	81597	81704	0.1
Denver, CO	184353	851	167	185331	185327	0.0

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TABLE A-4 (cont.)

City	(1)	(2)	(3)	(4)	(5)	(6)
Des Moines, IA	69920	517	128	68506	70531	3.0
Detroit, MI	490911	854	7173	497753	498463	0.1
*Durham, NC	30294	357	596	30097	31198	3.7
East Chicago, IN	14620	24	0	14639	14642	0.0
East Orange, NJ	28591	29	0	28618	28619	0.0
East St. Louis, IL	21304	166	424	21516	21842	1.5
Elizabeth, NJ	38486	606	0	38575	39079	1.3
Evanston, IL	26832	67	0	27173	26898	-1.0
Evansville, IN	46100	333	0	46404	46414	0.0
Flint, MI	60672	272	0	60931	60930	0.0
*Fort Worth, TX	131910	1588	382	129960	133750	2.9
Galveston, TX	20935	196	0	21024	21114	0.4
Gary, IN	51326	282	0	51598	51594	0.0
*Greensboro, NC	43829	392	1365	43696	45534	4.2
Harrisburg, PA	25368	391	0	25742	25727	-0.1
Hartford, CT	54818	89	1245	56024	56096	0.1
*Houston, TX	397141	2932	1749	393555	401447	2.0
*Huntington, WV	25835	159	0	26117	25985	-0.5
Indianapolis, IN	238342	1640	692	235772	240520	2.0
Jacksonville, Fl	159019	2422	486	161666	161716	0.0
Jersey City, NJ	86752	80	981	87853	87766	-0.1
Kansas City, KS	56361	341	0	54896	56685	3.3
Kansas City, MO	179999	1209	0	176373	181108	2.7
*Knoxville, TN	58059	676	0	57059	58691	2.9
*Little Rock, AR	45014	527	18	45294	45523	0.5
Los Angeles, CA	1023628	2160	116	1027374	1025799	-0.2
*Louisville, KY	123217	389	886	122683	124423	1.4
*Macon, GA	38882	437	533	38359	39787	3.7
Memphis, TN	189778	568	1085	190006	191364	0.7
*Miami, FL	119685	483	0	120393	120149	-0.2
Milwaukee, WI	235535	546	1985	236981	237973	0.4
Minneapolis, MN	160673	489	0	161141	161144	0.0
*Mobile, AL	57150	512	114	56938	57729	1.4
*Montgomery, AL	42107	225	0	41569	42314	1.8
Mt. Vernon, NY	24975	66	0	25051	25040	0.0
Nashville, TN	139167	737	566	140409	140409	0.0
Newark, NJ	120082	5205	801	121041	125787	3.9
New Bedford, MA	35155	279	0	35423	35425	0.0
New Haven, CT	46067	142	559	46741	46737	0.0
New Orleans, LA	189206	731	0	191363	189877	-0.8

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TABLE A-4 (cont.)

City	(1)	(2)	(3)	(4)	(5)	(6)
New Rochelle, NY	24400	63	0	24463	24462	0.0
New York, NY	2781880	3540	-17	2888872	2787295	-1.7
Norfolk, VA	83864	959	2591	86742	87047	0.4
Oakland, CA	136435	452	2638	139831	139361	0.4
Oklahoma City, OK	119545	2358	2771	124954	124251	-2.1
Omaha, NB	110786	1346	2994	111223	114879	3.3
*Pasadena, CA	45070	252	0	44653	45309	1.5
Paterson, NJ	46729	1126	1042	47746	48827	2.3
Philadelphia, PA	631870	1458	3189	642145	636301	-0.9
Pittsburg, PA	176430	953	718	178016	177997	0.0
*Portland, OR	145739	1589	889	145082	148103	2.1
Port Arthur, TX	18262	217	0	18455	18467	0.0
Providence, RI	62800	664	0	63148	63415	0.4
Richmond, VA	81605	671	587	82769	82803	0.0
Roanoke, VA	31464	698	0	32928	32123	0.6
Rochester, NY	100965	283	0	101238	101236	0.0
*Sacramento, CA	91165	395	1046	91697	92533	0.9
St. Louis, MO	210833	499	0	215479	211284	-1.9
St. Paul, MN	103701	437	0	104128	104123	0.0
*San Antonio, TX	191857	1367	1177	190692	194244	1.9
*San Diego, CA	212060	794	996	227006	233746	3.0
San Francisco, CA	293902	289	1977	295174	295157	0.0
*Savannah, GA	37677	567	86	37824	38295	1.2
Seattle, WA	204892	1013	275	206092	206088	0.0
*Shreveport, LA	58105	405	784	58439	59209	1.3
*Springfield, OH	27037	85	0	26731	27118	1.4
Tampa, FL	91721	1754	143	94889	95006	0.1
*Terre Haute, IN	23234	439	0	23446	23649	0.9
Toledo, OH	126557	364	282	125364	127178	1.4
Topeka, KS	43030	434	478	41991	43906	4.6
Trenton, NJ	33377	1374	0	33546	34687	3.4
Tulsa, OK	111957	1506	810	112792	114101	1.2
*Waco, TX	31557	657	642	31504	32747	3.9
Washington, DC	259001	511	1332	262538	262625	0.0
Wichita, KS	94211	544	607	92751	95280	2.7
Wilmington, DE	26713	330	0	27565	27017	-2.0
*Winston-Salem, NC	43605	315	79	42634	43979	3.2
Yonkers, NY	68898	209	0	69093	69103	0.0
Youngstown, OH	43412	301	1055	44655	44713	0.1

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TABLE A-4 (cont.)

Notes: Column 5 is derived from Columns 1, 2, and 3 by a procedure described in the text.

Column 6 = 100 [(Col. 5 - Col. 4) ÷ Col. 4].

* Identifies cities for which a special adjustment was made to allocate blocks in split block groups or split tracts.